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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Fuliang Weng

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KENYON & KENYON LLP  
ONE BROADWAY  
NEW YORK, NY 10004

EXAMINER

THANGAVELU, KANDASAMY

ART UNIT

PAPER NUMBER

2123

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/09/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/613,366

Applicant(s)

WENG ET AL.

Examiner

Kandasamy Thangavelu

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on July 3, 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This communication is in response to the Applicant's Response mailed on December 28, 2006. Claims 1, 814, 17 and 18 were amended. Claims 1-18 of the application are pending. This office action is made non-final.

#### ***Specification***

2. The disclosure is objected to because of the following informalities:

Page 5, Line 27, correction in the amendment of December 28, 2006, "until the number of selected features exceeds a predefined value" appears to be incorrect and it appears that it should be "until the number of selected features equals a predefined value".

Appropriate correction is required.

#### ***Claim Objections***

3. The following is a quotation of 37 C.F.R § 1.75 (d)(1):

The claim or claims must conform to the invention as set forth in the remainder of the specification and terms and phrases in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

4. Claims 8, 10, 14 and 18 are objected to because of the following informalities:

Amended Claim 8, Lines 16-17, "until one of a quantity of selected features exceeds a predefined value" appears to be incorrect and it appears that it should be "until one of a number of selected features reaches a predefined value". See claim 18.

Claim 10 Lines 1-2, "the gains of all remaining features at a predefined feature selection are re-evaluated" appears to be incorrect and it appears that it should be "the gains of all remaining candidate features at a predefined feature selection stage are re-evaluated".

Amended Claim 14, Lines 2-3, "determine gains for top-ranked features in ascending order from a highest to lowest" appears to be incorrect and it appears that it should be "determine gains for top-ranked features in descending order from a highest to lowest".

Amended Claim 18, Lines 20-21, "terminating the method if one of a quantity of selected features reaches a pre-defined value and a gain of a last feature reaches a pre-defined value" appears to be incorrect and it appears that it should be "terminating the method if one of a number of selected features reaches a pre-defined value and a gain of a last-selected feature falls below a pre-defined value". See claim 8.

Appropriate corrections are required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 13-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6.1 Claims 13-15 and 17, Line 1 states, " The processing arrangement of claim 12". There is insufficient antecedent basis for "The processing arrangement of claim 12" in the claims.

Claim 12, Line 1 refers to "A processing arrangement system".

6.2 Claim 16, Line 1 states, " The processing arrangement of claim 15". There is insufficient antecedent basis for "The processing arrangement of claim 15" in the claim, since the base claim 12 refers to "A processing arrangement system".

7. Claims 8 and 18 are rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps.

See MPEP § 2172.01. The omitted steps are:

Art Unit: 2123

7.1 Claim 8, Para 10 states, “(i) repeating steps (c) through (h) until one of a quantity of selected features exceeds a predefined value and a gain of a last-selected feature falls below a predefined value”.

This step does not allow to select a predefined number of selected features, because that would require repeating from Para 4, “(c) selecting a top-ranked feature with a highest gain in the ordered list” till Para 10, “(i) repeating steps (c) through (i) until one of a quantity of selected features exceeds a predefined value and a gain of a last-selected feature falls below a predefined value”.

7.2 Claim 18, Para 9 states “repeating the steps of computing the gain of the top-ranked feature, comparing the gains of the top-ranked and next-ranked features until the gain of the top-ranked feature exceeds the gains of ordered candidate features”. Comparing this to step (h) of claim 8, the repeating should include a step of “inserting the top-ranked feature in the ordered list so that the next-ranked feature becomes the top-ranked feature.” as done in claim 8.

Claim 18, Para 10 states, “terminating the method if one of:  
a quantity of selected features reaches a pre-defined value; and  
a gain of a last feature reaches a pre-defined value”.

Art Unit: 2123

This step does not allow to select a predefined number of selected features, because that would require repeating from Para 4, “removing the top-ranked feature from the ordered list of the candidate features” till Para 10, “terminating the method if one of:

a quantity of selected features reaches a pre-defined value; and

a gain of a last feature reaches a pre-defined value”.

Appropriate corrections are required.

### ***Claim Rejections - 35 USC § 101***

8. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. Claims 1-18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

9.1 Claim 1 states, “A method to select features for maximum entropy modeling, the method comprising:

determining gains for candidate features ...;

ranking the candidate features ...;

selecting a top-ranked feature in the ordered list ...; and

adjusting a model using the selected top-ranked feature...”.

The claim involves selecting features for maximum entropy modeling. The method does not produce any useful, tangible and concrete results and therefore is not statutory and cannot be patented under 35 USC 101. To produce useful, tangible and credible results, the method should display some of the results on a display terminal or save the results in a file for use in analysis and design.

Claims 2-7 depend on claim 1 but do not produce any useful, tangible and concrete results and therefore are not statutory and cannot be patented under 35 USC 101.

9.2 Claim 8 states, "A method to select features for maximum entropy modeling, the method comprising:

- (a) computing gains of candidate features ...;
- (b) ordering the candidate features ...;
- (c) selecting a top-ranked feature ...;
- (d) adjusting a model using the selected top-ranked feature;
- (e) removing the top-ranked feature from the ordered list ...;
- (f) computing a gain of the top-ranked feature ...;
- (g) comparing the gain of the top-ranked feature ...;
- (h) if the gain of the top-ranked feature is less than the gain of the next-ranked feature, repositioning the top-ranked feature ... and repeating steps (f) through (h); and

Art Unit: 2123

(i) repeating steps (c) through (h) until one of a quantity of selected features exceeds a predefined value ...”.

The claim involves selecting features for maximum entropy modeling. The method does not produce any useful, tangible and concrete results and therefore is not statutory and cannot be patented under 35 USC 101. To produce useful, tangible and credible results, the method should display some of the results on a display terminal or save the results in a file for use in analysis and design.

Claims 9-11 depend on claim 8 but do not produce any useful, tangible and concrete results and therefore are not statutory and cannot be patented under 35 USC 101.

9.3 Claim 12 states, “A processing arrangement system to perform maximum entropy modeling ..., the system comprising:

- a gain computation arrangement to determine gains for the candidate features ...;
- a feature ranking arrangement to rank features ...;
- a feature selection arrangement to select a feature with a highest gain; and
- a model adjustment arrangement to adjust the model using the selected feature...”.

The claim involves a system for performing maximum entropy modeling. The system does not produce any useful, tangible and concrete results and therefore is not statutory and cannot be patented under 35 USC 101. To produce useful, tangible and credible results, the

Art Unit: 2123

system should display some results on a display terminal or save the results in a file for use in analysis and design.

In addition, the system as claimed comprises only software. If all parts of a system are software, then the system becomes functional descriptive material and is not statutory and cannot be patented under 35 USC 101. The system should include some hardware elements to be statutory and patentable.

Claims 13-17 depend on claim 12 but do not produce any useful, tangible and concrete results and therefore are not statutory and cannot be patented under 35 USC 101.

9.4 Claim 18 states, "A storage medium having a set of instructions executable by a processor to perform the following:

- ordering candidate features based on gains ...;

- selecting a top-ranked feature with a largest gain ...;

- removing the top-ranked feature from the ordered list ...;

- computing a gain of the top-ranked feature based on a model formed in a previous stage;

- comparing the gain of the top-ranked feature with gains of remaining candidate features

- ...;

- repeating the steps of computing the gain of the top-ranked feature, comparing the gains of the top-ranked and next-ranked features ...; and

- terminating the method if one of a quantity of selected features reaches a pre-defined value ...".

The medium does not produce any useful, tangible and concrete results and therefore is not statutory and cannot be patented under 35 USC 101. To produce useful, tangible and credible results, the medium should include instructions that display some of the results on a display terminal or save the results in a file for use in analysis and design.

In addition, the storage medium is not described in the specification and so could include printed paper. Because of the inclusion of paper, the claim is not patentable under 35 USC 101. Only computer readable storage or recording medium and the instructions on such medium is patentable.

### ***Response to Arguments***

10. Applicant's arguments with respect to 35 USC 112 First and Second Paragraphs and 35 USC 102 (b) rejections have been considered. Claim rejections under 35 USC 112 First Paragraph and 35 USC 102 (b) rejections are withdrawn in response to applicant's amendment to the specification and the arguments. New claim rejections under 35 USC 112 Second Paragraph and 35 USC 101 have been included in this office action.

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is

Art Unit: 2123

571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez, can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



K. Thangavelu  
Art Unit 2123  
March 6, 2007